PHYSICS

AAKASH INSTITUTE ENGLISH

Mock Test 34: PHYSICS

Example

1. Which of the following is incorrect about a plane electromagnetic wave?

A. It is produced during de-excitation of nucleus in radioactivity

B. It is produced when high speed electron enters into target of high atomic weight

C. An electron orbiting around its nucleus in a stationary orbit does emit electromagnetic wave

D. The electric energy and the magnetic energy have equal average values

Answer: C

2. The poynting vector in vaccum is represented by (where symbols have their usual meanings)

A. $\dfrac{\vec{B} \times \vec{E}}{\mu_0}$

B. $\dfrac{\vec{E} \times \vec{B}}{\mu_0}$

C. $\dfrac{\vec{E} \times \vec{B}}{\mu_0 \times \varepsilon_0}$

D. $\dfrac{\vec{B} \times \vec{E}}{\mu_0 \times \varepsilon_0}$

Answer: B

3. The average intensity of electromagnetic wave is (where symbols have their usual meanings)

A. $\varepsilon_0 \times E^2 \_ RMS \times c$

B. $\left(B^2 \_ RM\dfrac{S}{\mu_0} \right) \times c$

C. $\left(\dfrac{1}{2} \right) \times (\varepsilon_0) \times E^2 \_ RMS \times c$

D. Both (A) & (B)

Answer: D

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4. When a capacitor is charged then

l_c= conduction current l_d = displacembet current)

    A. $I_c = 0, I_d \neq 0$

    B. $I_c \neq 0, I_d = 0$

    C. $I_c = I_d$in same direction

    D. $I_c = I_d \in oppositedirection$

Answer: C

5. Sum of the areas of two squares is $544m^2$. If the difference of their perimeters is 32 m. find the sides of two squares.

A. [AT]

B. $[A]$

C. $[ML^2T^{-2}]$

D. $[ML^{-1}T^{-2}]$

Answer: B

6. If λ_v, λ_x and λ_m represent the wavelength of visible light , x-rays and microwaves respectively , then -

A. $(\lambda_m) > (\lambda_k) > (\lambda_v)$

B. $(\lambda_v) > (\lambda_m) > (\lambda_k)$

C. $(\lambda_m) > (\lambda_v) > (\lambda_k)$

D. $(\lambda_v) > (\lambda_k) > (\lambda_m)$

Answer: C

7. Which of the following are electromagnetic waves ?

    A. beeta-rays

    B. Cathode rays

    C. gamma-rays

    D. Both (1) & (2)

Answer: C

8. Image of an object in a convex mirror is

    A. Real and in front of mirror

    B. Virtual and in front of mirror

    C. Real and behind the mirror

    D. Virtual and behind the mirror

Answer: D

9. The minimum distance between the object and its real image for concave mirror is

    A. 2f

    B. 4f

    C. f

    D. zero

Answer: D

10. Draw E and V versus r on the same graph

for a point charge.

A. Parabola

B. Hyperbola

C. Straight line

D. Rectangular hyperbola

Answer: D

11. Can we project the image formed by a plane mirror on to a screen? Give reasons.

A. Always real

B. Always virtual

C. May be real or virtual

D. Always inverted

Answer: C

12. When the two plane mirror are parallel to each other, then the number of images of an object placed between them is

A. 2

B. 3

C. 4

D. Infinity

Answer: D

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13. An object is placed at a distance f in the front of a convex mirror. If focal length of the mirror is f, then distance of image from pole of the mirror is

    A. Virtual, inverted and diminished

    B. Virtual, erect and magnified

    C. Real, inverted and diminished

    D. Virtual, erect and diminished

Answer: D

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14. A short linear object of length b lies along the axis of a concave mirror of focal length f at a distance u from the pole of the mirror, what is the size of image?

A. $b \times \sqrt{\dfrac{u-f}{f}}$

B. $b \times \sqrt{\dfrac{f}{u-f}}$

C. $b \times \left(\dfrac{u-f}{f}\right)$

D. $b \times \left(\dfrac{f}{u-f}\right)^2$

Answer: D

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15. The value of refractive index of diamond

   A. 1.45

   B. 2.45

   C. 3.40

   D. 1.54

Answer: D

16. For total internal reflection to take place, the angle of incidence i and the refractive index μ of the medium must satisfy the inequality

A. $\mu = \sin c$

B. $\mu = \tan c$

C. $\left(\dfrac{1}{\mu}\right) = \sin c$

D. $\left(\dfrac{1}{\mu}\right) = \cos c$

Answer: C

17. If c is velocity of light in vacuum and v is the velocity of light in a medium of refractive index μ, then

A. $3 \times 10^8 \dfrac{m}{s}$

B. $15 \times 10^8 \dfrac{m}{s}$

C. $1.5 \times 10^8 \dfrac{m}{s}$

D. $3 \times 10^7 \dfrac{m}{s}$

Answer: C

18. Which of the following statements is true?

A. On refraction, the velocity of light do not

change

B. On refraction, the frequency of light

changes but wavelength of light do not

change

C. On refraction, both the velocity as well as the wavelength of light change but the frequency do not change

D. Both (1) & (2)

Answer: C

19. A light enters a glass slab of thickness t with angle of incidence i suffers lateral

shifts(s).If angle of refraction of light is r, then lateral shift is equal to

A. $\dfrac{t \times \cos(i-r)}{\sin i}$

B. $\dfrac{t \times \sin(i-r)}{\cos r}$

C. $\dfrac{t \times \sin(i-r)}{\cos i}$

D. $\dfrac{t \times \cos(i-r)}{\cos r}$

Answer: B

20. If a ray of light is incident from rarer medium at an angle 45° on the surface which separates two medium having refractive indices 1 and $\sqrt{2}$ for rarer and denser medium, then angle of deviation of refractive ray with incident ray is

    A. 45°

    B. 15°

    C. 30°

    D. 75°

Answer: B

21. If the incident ray falls normally on the refracting surface then

    A. Refraction do not take place

    B. Refraction take place with little bending

    C. Refraction takes place without bending

    D. Reflection takes place

Answer: C

22. A beaker is filled with two immiscible transparent liquids of refractive indices μ_1 and μ_2 having thickness of layers d_1 and d_2 respectively. The apparent depth of the bottom of the beaker is

A. $\left(\dfrac{d_1 \times d_2}{d_1 + d_2}\right)\left(\left(\dfrac{1}{\mu_1}\right) + \left(\dfrac{1}{\mu_2}\right)\right)$

B. $(\mu_1 \times \mu_2)(d_1 + d_2)$

C. $\left(\left(\dfrac{d_1}{\mu_2}\right) + \left(\dfrac{d_2}{\mu_1}\right)\right)$

D. $\left(\left(\dfrac{d_1}{\mu_1}\right) + \left(\dfrac{d_2}{\mu_2}\right)\right)$

Answer: D

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23. The brilliance of diamond is due to

A. Reflection of light

B. Refraction of light

C. Total internal reflection of light

D. Diffraction of light

Answer: C

24. If light travels a distance of 5 m in a medium of refractive index μ, then equivalent path in vaccum it would travel in same time is

A. $\left(\dfrac{5}{\mu}\right)$ m

B. (5μ) m

C. (25μ) m

D. $\left(\dfrac{25}{\mu}\right)$ m

Answer: B

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25. One mole of a perfect gas expands adiabatically .As a result of this,its pressure ,temperature and volume changes from P1,T1,V1, to P2,T2,V2 respectively .If molar

specific heat at volume is Cv then work done by the gas wil be ?

26. A ray of light falls on a transparent glass slab of refractive index $\sqrt{2}$. If the reflected and refracted rays are mutually perpendicular, then the angle of incidence is

A. $\tan^{-1}\left(\sqrt{\dfrac{3}{2}}\right)$

B. $\sin^{-1}\left(\sqrt{\dfrac{2}{3}}\right)$

C. $\tan^{-1}(\sqrt{2})$

D. $\sin^{-1}(\sqrt{3})$

Answer: c

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27. TOTAL INTERNAL REFLECTION

A. Light travels from rarer medium to denser medium

B. Light travels from denser medium to rarer medium

C. Angle of incidence less than critical angle

D. Both (2) & (3)

Answer: B

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